

HIL/LHD/ENV/MoEF/

Date: 27.11.2019

To,
The Additional Principal Chief Conservator of Forest (C)
Ministry of Environment, Forests and Climate Changes
Regional Office (ECZ), Ranchi-834002.

Sub: Compliance Report of EC conditions for Chiro-Kukud (152.57 ha) Bauxite Mining project of M/s Hindalco Industries Limited located in Gumla, Jharkhand for the period April'19 to September'19.

Ref: Environmental Clearance letter no J-11015/240/2006-IA II(M) dated 17th May 2007

Sir,

With reference to the above, we are submitting herewith the Compliance status report of EC conditions for **Chiro-Kukud (152.57 ha)** Bauxite Mining project of **M/s Hindalco Industries Limited** located in Gumla, Jharkhand for the period April'19 to September'19.

Hope you will find the same in order.

Thanking You

Yours Sincerely
FOR HINDALCO INDUSTRIES LIMITED


(Basudev Gangopadhyay)
GM (Geology & Environment)

Enclosure: - As Above

Copy to: Member Secretary, JSPCB, Ranchi
RO, JSPCB, Ranchi
CPCB, Zonal Office, Kolkata
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Compliance of conditions laid down in Environmental Clearance

CHIRO KUKUD BAUXITE MINES

Period: April'19 to September'19

J-11015/240/2006-IA.II (M) Dated 17.5.2007

Sl No	Conditions	Compliance Status
Specific Conditions		
1	Environmental Clearance is subject to final order of the Hon'ble Supreme Court of India in the matter of Goa foundation Vs Union of India in writ petition (civil) no 460 of 2004, as may be applicable to this project	Noted.
2.	Environmental Clearance is subject to obtaining clearance from Wildlife (Protection) Act '1972 from the competent authority.	The Mine is not is operation since 24 April 2018 as this matter is subjudice.
3.	All the conditions stipulated by SPCB in their NOC shall be effectively implemented.	Implementations of the stipulated conditions in NOC are fulfilled post which consent to operate has been obtained from time to time when mine was in operation. The Mine is not in operation since 24 April 2018.
4	The environmental clearance is subject to approval of the state land use Department, Government of Jharkhand for diversion of agricultural land for non-agricultural use.	The Mine is not in operation since 24 April 2018. The land acquisition was being done with permission of competent authority of State Government i.e. concerned Deputy Commissioner (D.C.) under CNT Act. The land lease agreement was being done with Raiyat (Land Owner) for 20 years with permission of State Govt with provision of returning the land as per as per the norms set by D.C.
5	Mining shall not intersect groundwater. The mine working shall be restricted to above ground water table. Prior approval of the Ministry of Environment & Forests and Central Ground Water Authority shall be obtained for mining below water table.	The Mine is not in operation since 24 April 2018. At no point of time mining activities was intersected the ground water table when mine was operational. In future also, post resumption of mining, it will be restricted above ground water table. We undertake that no mining is/was carried out below ground water table and the same statusco will be

		maintained in future also.
6	The project proponent shall ensure that the mining shall be carried out in small blocks and at a given point of time active mining shall not be more than 2.0 ha.	The Mine is not in operation since 24 April 2018.
7.	The project proponent shall ensure that no natural water course shall be obstructed due to any mining operations.	The Mine is not in operation since 24 April 2018. No natural water course obstructed when mine was operational.
8	Top soil, if any, shall be stacked properly with proper slope with adequate measures and should be used for reclamation and rehabilitation of mined out areas.	The Mine is not in operation since 24 April 2018. Sequential backfilling and reclamation of the mined out area practiced when mine was operational.
9.	The overburden generated during the initial year shall be kept as temporary dump. Concurrent backfilling starts from the 2 nd year onwards and there shall be no external dump at the end of the mine life.	The Mine is not in operation since 24 April 2018. The overburdens generated during the initial year are kept as temporary dump. Concurrent backfilling started from the 2 nd year onwards. There is no external dump as on date and earlier dump were re-handled. Data enclosed. Annexure 4.
10.	The entire excavated area of 86 ha shall be reclaimed, out of which 66 ha land shall be returned to raiyats for agricultural purpose and in 20 ha plantation shall be raised. Monitoring and management of rehabilitated areas should continue until the vegetation becomes self-sustaining. Compliance status should be submitted to the Ministry of Environment & Forest on six month basis.	This is being complied and also will be complied with in future post resumption of mining work.

11	<p>Catch drains and siltation ponds of appropriate size should be constructed to arrest silt and sediment flows from mine working. The water so collected should be utilized for watering the mine area, roads, green belt development etc. The drains should be regularly desilted particularly after monsoon and maintained properly.</p> <p>Garland drain (size, gradient and length) shall be constructed for mine pit and sump capacity should be designed keeping 50% safety margin over and above peak sudden rainfall (based on 50 years data) and maximum discharge in the area adjoining the mine site. Sump capacity should also provide adequate retention period to allow proper setting of silt material. Sedimentation pits should be constructed at the corners of the garland drains and desilted at regular intervals.</p>	<p>The Mine is not in operation since 24 April 2018.</p> <p>During operation period of mines Catch drains and siltation ponds of appropriate size have been constructed to arrest silt and sediment flows from mine working. The water so collected was utilized for watering the mine area, roads, green belt development etc. The drains were regularly desilted particularly after monsoon and maintained properly.</p> <p>Garland drains and sump of appropriate size were provided during above period as required.</p>
12	<p>Dimension of the retaining wall at the OB benches within the mine to check run-off and siltation should be based on rainfall data.</p>	<p>The Mine is not in operation since 24 April 2018 hence not applicable as of now.</p>
13	<p>Plantation shall be raised in an area of 20.0 ha including a green belt of adequate width by planting the native species around the ML area, roads, reclaimed area etc. in consultation with the local DFO / Agriculture Department. The density of the trees should be around 1500 plants per ha.</p>	<p>Plantation carried out progressively. The Mine is not in operation since 24 April 2018</p>
14	<p>The project authority should implement suitable conservation measures to augment ground water resources in the area in consultation with the Regional Director, Central Ground Water Board.</p>	<p>The Mine is not in operation since 24 April 2018.</p> <p>Suitable measures such as recharge pit, garland drain have been adopted to augment ground water resources in the area when mine was operational.</p> <p>It may be noted that there is no chance to intersect ground water table during mining operation.</p>

15	Regular monitoring of ground water level and quality should be carried out by establishing a network of existing wells and constructing new piezometers during the mining operation. The monitoring should be carried out four times in a year – pre-monsoon (April-May), monsoon (August), post-monsoon (November) and winter (January) and the data thus collected may be sent regularly to MOEF, Central Ground water Authority and Regional Director Central Ground Water Board.	It is being monitored. The ground water table is at depth of 80 mts approx. The working was restricted to shallow depth. Thus there was no possibility of intersection of ground water table. Monitoring report of potable water is enclosed as Annexure-1.
16	Prior permission from the competent authority should be obtained for drawl of water from the surface water bodies.	The Mine is not in operation since 24 April 2018. Not used any natural water for mining purpose when mine was operational. Water used for sprinkling and gardening was drawn from rain water harvesting pond.
17	Vehicular emissions should be kept under control and regularly monitored. Measures shall be taken for maintenance of vehicles used in mining operations and transportation of mineral. The vehicles should be covered with a tarpaulin and shall not be overloaded.	The Mine is not in operation since 24 April 2018. Vehicle engaged in mining operation were regularly checked and maintained The vehicles used were covered with tarpaulin while transportation of mineral.
18	Drills should either be operated with dust extractors or should be equipped with water injection system.	The Mine is not in operation since 24 April 2018. Wet drilling done for dust suppression when mine was in operation.
19	Blasting operation should be carried out only during the daytime. Controlled blasting should be practiced. The mitigative measures for control of ground vibration and to arrest fly rocks and boulders should be implemented.	The Mine is not in operation since 24 April 2018. However for this mine Blasting time was fixed during Lunch Time i.e. 1.00 PM -2.00 PM. Controlled blasting method practiced when mine was in operation. All efforts were taken to mitigate impact of blasting.
20	Consent to operate should be obtained from SPCB prior to start of enhanced production from the mine.	There is no proposal for production enhancement.
21	Sewage treatment plant should be installed for the colony. ETP should also be provided for workshop and wastewater generated from mining operations.	The Mine is not in operation since 24 April 2018. There was no effluent discharge from

		Mine, hence ETP is not required to install.
22	The project proponent should take all precautionary measures during mining operation for conservation and protection of endangered fauna such as Leopard, Indian Wolf, Indian elephant, Indian small civet, Indian Python, etc. Spotted in the study area. Action plan for conservation of flora and fauna shall be prepared and implemented in consultation with the State Forest and Wildlife Department. Necessary allocation of funds for implementation of the conservation plan shall be made and the funds so allocated shall be included in the project cost. Copy of action plan may be submitted to the Ministry and its Regional Office within 3 months.	The Mine is not is operation since 24 April 2018. Plan for conservation measures for protection of flora and fauna in the core & buffer zone is already prepared and submitted to PCCF, Ranchi for approval.
23	A Final Mine Closure plan along with details of Corpus Fund should be submitted to the Ministry of Environment & Forest 5 years in advance of final mine closure for approval.	Progressive Mine closure plan and Final mine closure plan (part) has been approved by IBM. FMCP for entire lease will be prepared & will be submitted in due time as per procedure mentioned in law. Based on the present resource estimate, and peak rated production capacity mentioned in EC, the tentative balance life is around 25 years. However, after completion of further detailed exploration, the resources estimate vis-à-vis balance life of the mine may change based on final resource estimate, EC capacity and cut-off grade at that point of time.

GENERAL CONDITIONS

SI No	Conditions	Compliance Status
1	No change in mining technology and scope of working should be made without prior approval of the Ministry of Environment & Forest	Noted.

2	No change in the calendar plan including excavation, quantum of mineral bauxite and waste should be made.	Noted but the Mine is not in operation since 24 April 2018.
3	Four ambient air quality-monitoring station should be established in the core zone as well as in the buffer zone for RPM, SPM, SO ₂ , NO _x monitoring. Location of the stations should be decided based on the metrological data, topographical features and environmentally and ecologically sensitive targets and frequency of monitoring should be undertaken in consultation with the State Pollution Control Board.	The Mine is not in operation since 24 April 2018. Monitoring Reports of AAQ data is attached as Annexure-1.
4	Data on ambient air quality (RPM, SPM, SO ₂ , NO _x) should be regularly submitted to the Ministry including its Regional office located at Bhubneshwar and the State Pollution Control Board / Central pollution Control Board once in six months.	The Mine is not in operation since 24 April 2018. Monitoring Reports is attached as Annexure-1.
5	Fugitive dust emission from all the sources should be controlled regularly. Water spraying arrangements on haul roads, loading and unloading and at transfer points should be provided and properly maintained.	The Mine is not in operation since 24 April 2018. Water tankers with sprinkling facility have been provided for haul roads, loading unloading & at transfer points when mine was operational.
6	Measures should be taken for control of noise levels below 85 dBA in the work environment. Workers engaged in operation of HEMM, etc. should be provided with ear plug / muffs.	The Mine is not in operation since 24 April 2018. PPE provided to operators within the work zone during operation of mines.
7	Industrial waste water (workshops and waste water from the mine) Should be properly collected, treated so as to conform to the standards prescribed under GSR 422 (E) dated 19 th May, 1993 and 31 st December, 1993 or as amended from time to time. Oil and grease trap should be installed before discharge of workshop effluents.	The Mine is not in operation since 24 April 2018.

8	<p>Personnel working in dusty areas should wear protective respiratory devices and they should also provided with adequate training and information on safety and health aspects.</p> <p>Occupational health surveillance program of the workers should be undertaken periodically to observe any contractions due to exposure to dust and take corrective measures, if needed.</p>	<p>The Mine is not in operation since 24 April 2018.</p> <p>PPE provided to workers during operation of mines. Training is provided through VT centre.</p> <p>PME is conducted for all workers.</p>
9	<p>A separate environmental management cell with suitable qualified personnel should be set-up under the control of a Senior Executive, who will report directly to the Head of the Organization.</p>	<p>Complied.</p> <p>A suitable environmental management cell has been developed with qualified personnel.</p> <p>Copy enclosed as Annexure- 3.</p>
10	<p>The project authorities should inform to the Regional Office located at Bhubneshwar regarding date of financial closures and final approval of the project by the concerned authorities and the date of start of land development work.</p>	<p>The Mine is not in operation since 24 April 2018.</p> <p>This was an operating Mine and hence provision related to financial closure not applicable.</p>
11	<p>The funds earmarked for environmental protection measures should be kept in separate account and should not be diverted for other purpose. Year wise expenditure should be reported to the Ministry and its Regional Office located at Bhubneshwar.</p>	<p>The funds earmarked for environmental protection measures are budgeted separately. Cost of environmental protection measures annexed as Annexure-2.</p>
12	<p>The Regional Office of this Ministry located at Bhubneshwar shall monitor compliance of the stipulated conditions. The project authorities should extend full cooperation to the officer (s) of the Regional Office by furnishing the requisite data / information / monitoring reports.</p>	<p>Agreed.</p>
13	<p>The project proponent shall submit six monthly report on the status of the implementation of the stipulated environmental safeguards to the Ministry of Environment and Forests its Regional Office, Bhubneshwar CPCB and State Pollution Control Board.</p>	<p>Duly submitted.</p>
14	<p>A copy of clearance letter will be marked to concerned Panchayat / local NGO, if any, from whom suggestion / representation has been received while</p>	<p>Complied</p>

	processing the proposal.	
15	State Pollution Control Board should display a copy of the clearance letter at the Regional office, District Industry Center and Collector's office / Tehsildar's Office for 30 days.	Displayed.
16	The project authorities should advertise at least in two local newspapers widely circulated, one of which locality concerned, within 7days of the issue of the clearance letter informing that the project has been accorded environmental clearance and a copy of the clearance letter is available with the State Pollution Control Board and also at web site of the Ministry of Environment and Forests at http://envfor.nic.in and a copy of the same should be forwarded to the Regional Office of this Ministry located Bhubneshwar.	Already done and copies submitted with earlier six monthly compliance report.



Eco Ventures Pvt. Ltd.

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Mahabal Enviro Engineers Pvt. Ltd.

At Booty, Near PHED Colony, Behind Pump House, PO – RMCC,
District – Ranchi 834009

CHIRO KUKUD BAUXITE MINE - ENVIRONMENTAL MONITORING REPORT

APRIL 2019

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE





Branch Office:

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CONTENT

LOCATION – CHIRO KUKUD BAUXITE MINE	
A.	AMBIENT AIR QUALITY – CORE ZONE
1	Kukud Village Near Mine Area
2	Kukad Village Near Weigh Bridge
3	Chiro Village – Near Mgazine
4	Orsa Village hiro Village – Near Pillar No.1
B.	AMBIENT AIR QUALITY – BUFFER ZONE
1	Kukud Village – Near Hindalco Campus
2	Jaljali Village – Near Shiv Temle Sabag Road
3	Amtahi Village – Near Tailoring Centre
4	Ambakona village





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Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

April 2019

Report No: MEEPL/MAY0402/2019-20	Date: 31 st May, 2019
Sample described by customer: AMBIENT AIR QUALITY MONITORING	
Client Name: Hindalco Industries Limited	
Client Address: Lohardaga	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample type: AMBIENT AIR QUALITY MONITORING	
Marks on Sample: Location: Kukud Village – Near Mine Area	
Sample collected on: 19.04.2019	

LOCATION / IDENTIFICATION: Kukud Village – Near Mine Area				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	59.2
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	30.4
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	3.9
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	3.0
05.	Ammonia (NH ₃)	µg/m ³	400	4.1
06.	Ozone (O ₃)	µg/m ³	180	11.7
07.	Carbon Monoxide (CO)	mg/m ³	02	0.28
08.	Lead (Pb)	µg/m ³	1.0	0.03
09.	Nickel (Ni)	ng/m ³	20	2.1
10.	Arsenic (As)	ng/m ³	06	2.0
11.	Benzene (C ₆ H ₆)	µg/m ³	05	2.1
12.	Benzo (a) Pyrene	µg/m ³	01	0.40

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE





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Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

April 2019

Report No: MEEPL/MAY0403/2019-20	Date: 31 st May, 2019
Sample described by customer: AMBIENT AIR QUALITY MONITORING	
Client Name: Hindalco Industries Limited	
Client Address: Lohardaga	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample type: AMBIENT AIR QUALITY MONITORING	
Marks on Sample: Location: Kukad Village – Near Weigh Bridge	
Sample collected on: 19.04.2019	

LOCATION / IDENTIFICATION: Kukad Village – Near Weigh Bridge				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	62.5
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	34.6
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	4.2
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	3.5
05.	Ammonia (NH ₃)	µg/m ³	400	4.8
06.	Ozone (O ₃)	µg/m ³	180	9.9
07.	Carbon Monoxide (CO)	mg/m ³	02	0.33
08.	Lead (Pb)	µg/m ³	1.0	0.03
09.	Nickel (Ni)	ng/m ³	20	2.0
10.	Arsenic (As)	ng/m ³	06	2.1
11.	Benzene (C ₆ H ₆)	µg/m ³	05	2.0
12.	Benzo (a) Pyrene	µg/m ³	01	0.32

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

April 2019

Report No: MEEPL/MAY0404/2019-20	Date: 31 st May, 2019
Sample described by customer: AMBIENT AIR QUALITY MONITORING	
Client Name: Hindalco Industries Limited	
Client Address: Lohardaga	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample type: AMBIENT AIR QUALITY MONITORING	
Marks on Sample: Location: Chiro Village – Near Mgazine	
Sample collected on: 19.04.2019	

LOCATION / IDENTIFICATION: Chiro Village – Near Mgazine				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	55.0
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	31.1
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	3.2
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	4.4
05.	Ammonia (NH ₃)	µg/m ³	400	3.1
06.	Ozone (O ₃)	µg/m ³	180	10.8
07.	Carbon Monoxide (CO)	mg/m ³	02	0.27
08.	Lead (Pb)	µg/m ³	1.0	0.02
09.	Nickel (Ni)	ng/m ³	20	1.6
10.	Arsenic (As)	ng/m ³	06	2.0
11.	Benzene (C ₆ H ₆)	µg/m ³	05	3.0
12.	Benzo (a) Pyrene	µg/m ³	01	0.25

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

April 2019

Report No: MEEPL/MAY0405/2019-20	Date: 31 st May, 2019
Sample described by customer: AMBIENT AIR QUALITY MONITORING	
Client Name: Hindalco Industries Limited	
Client Address: Lohardaga	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample type: AMBIENT AIR QUALITY MONITORING	
Marks on Sample: Location: Chiro Village – Near Pillar No. 1	
Sample collected on: 19.04.2019	

LOCATION / IDENTIFICATION: Chiro Village – Near Pillar No. 1				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	61.8
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	29.6
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	2.9
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	3.6
05.	Ammonia (NH ₃)	µg/m ³	400	4.0
06.	Ozone (O ₃)	µg/m ³	180	10.0
07.	Carbon Monoxide (CO)	mg/m ³	02	0.27
08.	Lead (Pb)	µg/m ³	1.0	0.02
09.	Nickel (Ni)	ng/m ³	20	1.7
10.	Arsenic (As)	ng/m ³	06	2.0
11.	Benzene (C ₆ H ₆)	µg/m ³	05	2.1
12.	Benzo (a) Pyrene	µg/m ³	01	0.30

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

April 2019

Report No: MEEPL/MAY0406/2019-20	Date: 31 st May, 2019
Sample described by customer: AMBIENT AIR QUALITY MONITORING	
Client Name: Hindalco Industries Limited	
Client Address: Lohardaga	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample type: AMBIENT AIR QUALITY MONITORING	
Marks on Sample: Location: Kudag Village – Near Hindalco Campus	
Sample collected on: 19.04.2019	

LOCATION / IDENTIFICATION: Near Chiro Kudag Village – Near Hindalco Campus				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	67.3
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	35.0
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	2.5
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	3.9
05.	Ammonia (NH ₃)	µg/m ³	400	4.5
06.	Ozone (O ₃)	µg/m ³	180	9.8
07.	Carbon Monoxide (CO)	mg/m ³	02	0.30
08.	Lead (Pb)	µg/m ³	1.0	0.03
09.	Nickel (Ni)	ng/m ³	20	2.3
10.	Arsenic (As)	ng/m ³	06	2.0
11.	Benzene (C ₆ H ₆)	µg/m ³	05	2.1
12.	Benzo (a) Pyrene	µg/m ³	01	0.31

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE





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Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

April 2019

Report No: MEEPL/MAY0407/2019-20	Date: 31 st May, 2019
Sample described by customer: AMBIENT AIR QUALITY MONITORING	
Client Name: Hindalco Industries Limited	
Client Address: Lohardaga	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample type: AMBIENT AIR QUALITY MONITORING	
Marks on Sample: Location: Jaljali Village – Near Shiv Temple Sabag Road	
Sample collected on: 19.04.2019	

LOCATION / IDENTIFICATION: Jaljali Village – Near Shiv Temple Sabag Road				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	57.0
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	28.8
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	2.5
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	4.7
05.	Ammonia (NH ₃)	µg/m ³	400	3.1
06.	Ozone (O ₃)	µg/m ³	180	9.2
07.	Carbon Monoxide (CO)	mg/m ³	02	0.24
08.	Lead (Pb)	µg/m ³	1.0	0.02
09.	Nickel (Ni)	ng/m ³	20	1.4
10.	Arsenic (As)	ng/m ³	06	2.1
11.	Benzene (C ₆ H ₆)	µg/m ³	05	2.0
12.	Benzo (a) Pyrene	µg/m ³	01	0.30

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE





Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

April 2019

Report No: MEEPL/MAY0408/2019-20	Date: 31 st May, 2019
Sample described by customer: AMBIENT AIR QUALITY MONITORING	
Client Name: Hindalco Industries Limited	
Client Address: Lohardaga	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample type: AMBIENT AIR QUALITY MONITORING	
Marks on Sample: Location: Amtahi Village – Near Tailoring Centre	
Sample collected on: 19.04.2019	

LOCATION / IDENTIFICATION: Amtahi Village – Near Tailoring Centre				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	65.1
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	31.3
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	2.5
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	3.9
05.	Ammonia (NH ₃)	µg/m ³	400	4.1
06.	Ozone (O ₃)	µg/m ³	180	9.6
07.	Carbon Monoxide (CO)	mg/m ³	02	0.31
08.	Lead (Pb)	µg/m ³	1.0	0.03
09.	Nickel (Ni)	ng/m ³	20	2.6
10.	Arsenic (As)	ng/m ³	06	2.0
11.	Benzene (C ₆ H ₆)	µg/m ³	05	2.1
12.	Benzo (a) Pyrene	µg/m ³	01	0.31

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

April 2019

Report No: MEEPL/MAY0409/2019-20	Date: 31 st May, 2019
Sample described by customer: AMBIENT AIR QUALITY MONITORING	
Client Name: Hindalco Industries Limited	
Client Address: Lohardaga	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample type: AMBIENT AIR QUALITY MONITORING	
Marks on Sample: Location: Ambakona Village	
Sample collected on: 19.04.2019	

LOCATION / IDENTIFICATION: Ambakona Village				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	60.3
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	28.1
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	2.9
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	4.0
05.	Ammonia (NH ₃)	µg/m ³	400	3.3
06.	Ozone (O ₃)	µg/m ³	180	9.7
07.	Carbon Monoxide (CO)	mg/m ³	02	0.20
08.	Lead (Pb)	µg/m ³	1.0	0.02
09.	Nickel (Ni)	ng/m ³	20	1.4
10.	Arsenic (As)	ng/m ³	06	2.1
11.	Benzene (C ₆ H ₆)	µg/m ³	05	2.0
12.	Benzo (a) Pyrene	µg/m ³	01	0.30

For Mahabal Enviro Engineers Pvt. Ltd.

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CHIRO KUKUD BAUXITE MINE - ENVIRONMENTAL MONITORING REPORT

MAY 2019

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
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CONTENT

LOCATION – CHIRO KUKUD BAUXITE MINE	
A.	AMBIENT AIR QUALITY – CORE ZONE
1	Kukud Village Near Mine Area
2	Kukad Village Near Weigh Bridge
3	Chiro Village – Near Mgazine
4	Orsa Village hiro Village – Near Pillar No.1
B.	AMBIENT AIR QUALITY – BUFFER ZONE
1	Kukud Village – Near Hindalco Campus
2	Jaljali Village – Near Shiv Temle Sabag Road
3	Amtahi Village – Near Tailoring Centre
4	Ambakona village





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Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

MAY 2019

Report no: MEEPL/JUNE0362/2019-20	Date: 28 th June, 2019
Sample described by customer: AMBIENT AIR QUALITY MONITORING	
Client Name: Hindalco Industries Limited	
Client Address: Lohardaga	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample type: AMBIENT AIR QUALITY MONITORING	
Marks on Sample: Location: Kukud Village – Near Mine Area	
Sample collected on: 17.05.2019	

LOCATION / IDENTIFICATION: Kukud Village – Near Mine Area				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	55.0
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	27.9
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	3.3
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	3.8
05.	Ammonia (NH ₃)	µg/m ³	400	4.0
06.	Ozone (O ₃)	µg/m ³	180	10.4
07.	Carbon Monoxide (CO)	mg/m ³	02	0.26
08.	Lead (Pb)	µg/m ³	1.0	0.03
09.	Nickel (Ni)	ng/m ³	20	1.9
10.	Arsenic (As)	ng/m ³	06	2.0
11.	Benzene (C ₆ H ₆)	µg/m ³	05	2.1
12.	Benzo (a) Pyrene	µg/m ³	01	0.40

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

MAY 2019

Report no: MEEPL/JUNE0363/2019-20	Date: 28 th June, 2019
Sample described by customer: AMBIENT AIR QUALITY MONITORING	
Client Name: Hindalco Industries Limited	
Client Address: Lohardaga	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample type: AMBIENT AIR QUALITY MONITORING	
Marks on Sample: Location: Kukad Village – Near Weigh Bridge	
Sample collected on: 17.05.2019	

LOCATION / IDENTIFICATION: Kukad Village – Near Weigh Bridge				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	66.1
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	32.7
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	5.1
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	4.7
05.	Ammonia (NH ₃)	µg/m ³	400	4.2
06.	Ozone (O ₃)	µg/m ³	180	9.0
07.	Carbon Monoxide (CO)	mg/m ³	02	0.35
08.	Lead (Pb)	µg/m ³	1.0	0.03
09.	Nickel (Ni)	ng/m ³	20	2.0
10.	Arsenic (As)	ng/m ³	06	2.1
11.	Benzene (C ₆ H ₆)	µg/m ³	05	2.0
12.	Benzo (a) Pyrene	µg/m ³	01	0.32

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

MAY 2019

Report no: MEEPL/JUNE0364/2019-20	Date: 28 th June, 2019
Sample described by customer: AMBIENT AIR QUALITY MONITORING	
Client Name: Hindalco Industries Limited	
Client Address: Lohardaga	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample type: AMBIENT AIR QUALITY MONITORING	
Marks on Sample: Location: Chiro Village – Near Mgazine	
Sample collected on: 17.05.2019	

LOCATION / IDENTIFICATION: Chiro Village – Near Mgazine				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	59.5
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	35.2
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	3.7
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	4.0
05.	Ammonia (NH ₃)	µg/m ³	400	3.3
06.	Ozone (O ₃)	µg/m ³	180	9.5
07.	Carbon Monoxide (CO)	mg/m ³	02	0.25
08.	Lead (Pb)	µg/m ³	1.0	0.02
09.	Nickel (Ni)	ng/m ³	20	1.9
10.	Arsenic (As)	ng/m ³	06	2.0
11.	Benzene (C ₆ H ₆)	µg/m ³	05	3.0
12.	Benzo (a) Pyrene	µg/m ³	01	0.25

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

MAY 2019

Report no: MEEPL/JUNE0365/2019-20	Date: 28 th June, 2019
Sample described by customer: AMBIENT AIR QUALITY MONITORING	
Client Name: Hindalco Industries Limited	
Client Address: Lohardaga	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample type: AMBIENT AIR QUALITY MONITORING	
Marks on Sample: Location: Chiro Village – Near Pillar No. 1	
Sample collected on: 17.05.2019	

LOCATION / IDENTIFICATION: Chiro Village – Near Pillar No. 1				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	62.3
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	27.1
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	2.5
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	3.3
05.	Ammonia (NH ₃)	µg/m ³	400	2.8
06.	Ozone (O ₃)	µg/m ³	180	8.5
07.	Carbon Monoxide (CO)	mg/m ³	02	0.22
08.	Lead (Pb)	µg/m ³	1.0	0.02
09.	Nickel (Ni)	ng/m ³	20	1.5
10.	Arsenic (As)	ng/m ³	06	2.0
11.	Benzene (C ₆ H ₆)	µg/m ³	05	2.1
12.	Benzo (a) Pyrene	µg/m ³	01	0.30

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

MAY 2019

Report no: MEEPL/JUNE0366/2019-20	Date: 28 th June, 2019
Sample described by customer: AMBIENT AIR QUALITY MONITORING	
Client Name: Hindalco Industries Limited	
Client Address: Lohardaga	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample type: AMBIENT AIR QUALITY MONITORING	
Marks on Sample: Location: Kudag Village – Near Hindalco Campus	
Sample collected on: 17.05.2019	

LOCATION / IDENTIFICATION: Near Chiro Kudag Village – Near Hindalco Campus				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	64.9
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	31.5
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	2.6
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	3.1
05.	Ammonia (NH ₃)	µg/m ³	400	3.7
06.	Ozone (O ₃)	µg/m ³	180	10.1
07.	Carbon Monoxide (CO)	mg/m ³	02	0.32
08.	Lead (Pb)	µg/m ³	1.0	0.03
09.	Nickel (Ni)	ng/m ³	20	2.2
10.	Arsenic (As)	ng/m ³	06	2.0
11.	Benzene (C ₆ H ₆)	µg/m ³	05	2.1
12.	Benzo (a) Pyrene	µg/m ³	01	0.31

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

MAY 2019

Report no: MEEPL/JUNE0367/2019-20	Date: 28 th June, 2019
Sample described by customer: AMBIENT AIR QUALITY MONITORING	
Client Name: Hindalco Industries Limited	
Client Address: Lohardaga	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample type: AMBIENT AIR QUALITY MONITORING	
Marks on Sample: Location: Jaljali Village – Near Shiv Temple Sabag Road	
Sample collected on: 17.05.2019	

LOCATION / IDENTIFICATION: Jaljali Village – Near Shiv Temple Sabag Road				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	53.9
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	25.7
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	2.9
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	4.2
05.	Ammonia (NH ₃)	µg/m ³	400	3.5
06.	Ozone (O ₃)	µg/m ³	180	8.5
07.	Carbon Monoxide (CO)	mg/m ³	02	0.27
08.	Lead (Pb)	µg/m ³	1.0	0.02
09.	Nickel (Ni)	ng/m ³	20	1.4
10.	Arsenic (As)	ng/m ³	06	2.1
11.	Benzene (C ₆ H ₆)	µg/m ³	05	2.0
12.	Benzo (a) Pyrene	µg/m ³	01	0.30

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

MAY 2019

Report no: MEEPL/JUNE0368/2019-20	Date: 28 th June, 2019
Sample described by customer: AMBIENT AIR QUALITY MONITORING	
Client Name: Hindalco Industries Limited	
Client Address: Lohardaga	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample type: AMBIENT AIR QUALITY MONITORING	
Marks on Sample: Location: Amtahi Village – Near Tailoring Centre	
Sample collected on: 17.05.2019	

LOCATION / IDENTIFICATION: Amtahi Village – Near Tailoring Centre				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	70.0
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	35.7
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	2.9
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	3.2
05.	Ammonia (NH ₃)	µg/m ³	400	4.0
06.	Ozone (O ₃)	µg/m ³	180	9.1
07.	Carbon Monoxide (CO)	mg/m ³	02	0.33
08.	Lead (Pb)	µg/m ³	1.0	0.03
09.	Nickel (Ni)	ng/m ³	20	2.3
10.	Arsenic (As)	ng/m ³	06	2.0
11.	Benzene (C ₆ H ₆)	µg/m ³	05	2.1
12.	Benzo (a) Pyrene	µg/m ³	01	0.31

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

MAY 2019

Report no: MEEPL/JUNE0369/2019-20	Date: 28 th June, 2019
Sample described by customer: AMBIENT AIR QUALITY MONITORING	
Client Name: Hindalco Industries Limited	
Client Address: Lohardaga	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample type: AMBIENT AIR QUALITY MONITORING	
Marks on Sample: Location: Ambakona Village	
Sample collected on: 17.05.2019	

LOCATION / IDENTIFICATION: Ambakona Village				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	52.8
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	25.3
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	2.4
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	3.7
05.	Ammonia (NH ₃)	µg/m ³	400	3.1
06.	Ozone (O ₃)	µg/m ³	180	9.0
07.	Carbon Monoxide (CO)	mg/m ³	02	0.23
08.	Lead (Pb)	µg/m ³	1.0	0.02
09.	Nickel (Ni)	ng/m ³	20	1.4
10.	Arsenic (As)	ng/m ³	06	2.1
11.	Benzene (C ₆ H ₆)	µg/m ³	05	2.0
12.	Benzo (a) Pyrene	µg/m ³	01	0.30

For Mahabal Enviro Engineers Pvt. Ltd.

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CHIRO KUKUD BAUXITE MINE - ENVIRONMENTAL MONITORING REPORT

JUNE 2019

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
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CONTENT

LOCATION – CHIRO KUKUD BAUXITE MINE	
A.	AMBIENT AIR QUALITY – CORE ZONE
1	Kukud Village Near Mine Area
2	Kukud Village Near Weigh Bridge
3	Chiro Village – Near Mgazine
4	Orsa Village hiro Village – Near Pillar No.1
B.	AMBIENT AIR QUALITY – BUFFER ZONE
1	Kudag Village – Near Hindalco Campus
2	Jaljali Village – Near Shiv Temle Sabag Road
3	Amtahi Village – Near Tailoring Centre
4	Ambakona village





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Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

JUNE 2019

Report no: MEEPL/JULY0271/2019-20	Date: 15 th July, 2019
Sample described by customer: AMBIENT AIR QUALITY MONITORING	
Client Name: Hindalco Industries Limited	
Client Address: Lohardaga	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample type: AMBIENT AIR QUALITY MONITORING	
Marks on Sample: Location: Kukud Village – Near Mine Area	
Sample collected on: 18.06.2019	

LOCATION / IDENTIFICATION: Kukud Village – Near Mine Area				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	52.9
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	25.5
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	3.1
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	3.6
05.	Ammonia (NH ₃)	µg/m ³	400	3.8
06.	Ozone (O ₃)	µg/m ³	180	9.1
07.	Carbon Monoxide (CO)	mg/m ³	02	0.22
08.	Lead (Pb)	µg/m ³	1.0	0.03
09.	Nickel (Ni)	ng/m ³	20	1.6
10.	Arsenic (As)	ng/m ³	06	2.0
11.	Benzene (C ₆ H ₆)	µg/m ³	05	2.1
12.	Benzo (a) Pyrene	µg/m ³	01	0.40

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE





Mahabal Enviro Engineers Pvt. Ltd.

Branch Office:

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E-mail: mahabalanranchi@gmail.com

Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

JUNE 2019

Report no: MEEPL/JULY0272/2019-20	Date: 15 th July, 2019
Sample described by customer: AMBIENT AIR QUALITY MONITORING	
Client Name: Hindalco Industries Limited	
Client Address: Lohardaga	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample type: AMBIENT AIR QUALITY MONITORING	
Marks on Sample: Location: Kukud Village – Near Weigh Bridge	
Sample collected on: 18.06.2019	

LOCATION / IDENTIFICATION: Kukud Village – Near Weigh Bridge				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	57.5
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	28.3
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	5.4
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	4.1
05.	Ammonia (NH ₃)	µg/m ³	400	4.7
06.	Ozone (O ₃)	µg/m ³	180	8.5
07.	Carbon Monoxide (CO)	mg/m ³	02	0.32
08.	Lead (Pb)	µg/m ³	1.0	0.03
09.	Nickel (Ni)	ng/m ³	20	2.0
10.	Arsenic (As)	ng/m ³	06	2.1
11.	Benzene (C ₆ H ₆)	µg/m ³	05	1.7
12.	Benzo (a) Pyrene	µg/m ³	01	0.32

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

JUNE 2019

Report no: MEEPL/JULY0273/2019-20	Date: 15 th July, 2019
Sample described by customer: AMBIENT AIR QUALITY MONITORING	
Client Name: Hindalco Industries Limited	
Client Address: Lohardaga	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample type: AMBIENT AIR QUALITY MONITORING	
Marks on Sample: Location: Chiro Village – Near Mgazine	
Sample collected on: 18.06.2019	

LOCATION / IDENTIFICATION: Chiro Village – Near Mgazine				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	52.0
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	25.5
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	3.1
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	4.3
05.	Ammonia (NH ₃)	µg/m ³	400	3.1
06.	Ozone (O ₃)	µg/m ³	180	9.0
07.	Carbon Monoxide (CO)	mg/m ³	02	0.22
08.	Lead (Pb)	µg/m ³	1.0	0.02
09.	Nickel (Ni)	ng/m ³	20	1.5
10.	Arsenic (As)	ng/m ³	06	2.0
11.	Benzene (C ₆ H ₆)	µg/m ³	05	1.6
12.	Benzo (a) Pyrene	µg/m ³	01	0.25

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

JUNE 2019

Report no: MEEPL/JULY0274/2019-20	Date: 15 th July, 2019
Sample described by customer: AMBIENT AIR QUALITY MONITORING	
Client Name: Hindalco Industries Limited	
Client Address: Lohardaga	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample type: AMBIENT AIR QUALITY MONITORING	
Marks on Sample: Location: Chiro Village – Near Pillar No. 1	
Sample collected on: 18.06.2019	

LOCATION / IDENTIFICATION: Chiro Village – Near Pillar No. 1				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	64.1
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	30.5
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	2.8
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	3.1
05.	Ammonia (NH ₃)	µg/m ³	400	2.9
06.	Ozone (O ₃)	µg/m ³	180	8.0
07.	Carbon Monoxide (CO)	mg/m ³	02	0.24
08.	Lead (Pb)	µg/m ³	1.0	0.02
09.	Nickel (Ni)	ng/m ³	20	1.5
10.	Arsenic (As)	ng/m ³	06	2.0
11.	Benzene (C ₆ H ₆)	µg/m ³	05	2.1
12.	Benzo (a) Pyrene	µg/m ³	01	0.30

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

JUNE 2019

Report no: MEEPL/JULY0275/2019-20	Date: 15 th July, 2019
Sample described by customer: AMBIENT AIR QUALITY MONITORING	
Client Name: Hindalco Industries Limited	
Client Address: Lohardaga	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample type: AMBIENT AIR QUALITY MONITORING	
Marks on Sample: Location: Kudag Village – Near Hindalco Campus	
Sample collected on: 18.06.2019	

LOCATION / IDENTIFICATION: Near Chiro Kudag Village – Near Hindalco Campus				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	69.2
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	33.7
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	2.9
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	3.5
05.	Ammonia (NH ₃)	µg/m ³	400	3.0
06.	Ozone (O ₃)	µg/m ³	180	9.7
07.	Carbon Monoxide (CO)	mg/m ³	02	0.33
08.	Lead (Pb)	µg/m ³	1.0	0.03
09.	Nickel (Ni)	ng/m ³	20	2.2
10.	Arsenic (As)	ng/m ³	06	2.0
11.	Benzene (C ₆ H ₆)	µg/m ³	05	2.1
12.	Benzo (a) Pyrene	µg/m ³	01	0.29

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

JUNE 2019

Report no: MEEPL/JULY0276/2019-20	Date: 15 th July, 2019
Sample described by customer: AMBIENT AIR QUALITY MONITORING	
Client Name: Hindalco Industries Limited	
Client Address: Lohardaga	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample type: AMBIENT AIR QUALITY MONITORING	
Marks on Sample: Location: Jaljali Village – Near Shiv Temple Sabag Road	
Sample collected on: 18.06.2019	

LOCATION / IDENTIFICATION: Jaljali Village – Near Shiv Temple Sabag Road				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	56.4
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	27.1
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	3.0
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	4.5
05.	Ammonia (NH ₃)	µg/m ³	400	3.2
06.	Ozone (O ₃)	µg/m ³	180	8.5
07.	Carbon Monoxide (CO)	mg/m ³	02	0.29
08.	Lead (Pb)	µg/m ³	1.0	0.02
09.	Nickel (Ni)	ng/m ³	20	1.4
10.	Arsenic (As)	ng/m ³	06	2.1
11.	Benzene (C ₆ H ₆)	µg/m ³	05	2.0
12.	Benzo (a) Pyrene	µg/m ³	01	0.30

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

JUNE 2019

Report no: MEEPL/JULY0277/2019-20	Date: 15 th July, 2019
Sample described by customer: AMBIENT AIR QUALITY MONITORING	
Client Name: Hindalco Industries Limited	
Client Address: Lohardaga	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample type: AMBIENT AIR QUALITY MONITORING	
Marks on Sample: Location: Amtahi Village – Near Tailoring Centre	
Sample collected on: 18.06.2019	

LOCATION / IDENTIFICATION: Amtahi Village – Near Tailoring Centre				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	63.4
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	30.0
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	3.3
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	3.9
05.	Ammonia (NH ₃)	µg/m ³	400	3.3
06.	Ozone (O ₃)	µg/m ³	180	9.4
07.	Carbon Monoxide (CO)	mg/m ³	02	0.30
08.	Lead (Pb)	µg/m ³	1.0	0.03
09.	Nickel (Ni)	ng/m ³	20	2.3
10.	Arsenic (As)	ng/m ³	06	2.0
11.	Benzene (C ₆ H ₆)	µg/m ³	05	2.1
12.	Benzo (a) Pyrene	µg/m ³	01	0.31

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

JUNE 2019

Report no: MEEPL/JULY0278/2019-20	Date: 15 th July, 2019
Sample described by customer: AMBIENT AIR QUALITY MONITORING	
Client Name: Hindalco Industries Limited	
Client Address: Lohardaga	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample type: AMBIENT AIR QUALITY MONITORING	
Marks on Sample: Location: Ambakona Village	
Sample collected on: 18.06.2019	

LOCATION / IDENTIFICATION: Ambakona Village				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	50.1
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	26.5
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	2.8
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	3.2
05.	Ammonia (NH ₃)	µg/m ³	400	3.0
06.	Ozone (O ₃)	µg/m ³	180	8.6
07.	Carbon Monoxide (CO)	mg/m ³	02	0.24
08.	Lead (Pb)	µg/m ³	1.0	0.02
09.	Nickel (Ni)	ng/m ³	20	1.5
10.	Arsenic (As)	ng/m ³	06	2.1
11.	Benzene (C ₆ H ₆)	µg/m ³	05	2.0
12.	Benzo (a) Pyrene	µg/m ³	01	0.30

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
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Eco Ventures Pvt. Ltd.

Regd. Office: 2/37, Sarvapriya Vihar, Near IIT Gate, New Delhi-110016

Corporate Office: 7/8 Bhaveshwar Bhuvan, Opp Portugese Church, Near Dindayal Upadhyay Garden,
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E: ecoventures.mumbai@gmail.com / ecoventures@eco-ventures.in

Mahabal Enviro Engineers Pvt. Ltd.

At Booty, Near PHED Colony, Behind Pump House, PO – RMCC,
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CHIRO KUKUD BAUXITE MINE - ENVIRONMENTAL MONITORING REPORT

JULY 2019

For Mahabal Enviro Engineers Pvt. Ltd.

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CONTENT

LOCATION – CHIRO KUKUD BAUXITE MINE	
A.	AMBIENT AIR QUALITY – CORE ZONE
1	Kukud Village Near Mine Area
2	Kukud Village Near Weigh Bridge
3	Chiro Village – Near Mgazine
4	Orsa Village hiro Village – Near Pillar No.1
B.	AMBIENT AIR QUALITY – BUFFER ZONE
1	Kudag Village – Near Hindalco Campus
2	Jaljali Village – Near Shiv Temle Sabag Road
3	Amtahi Village – Near Tailoring Centre
4	Ambakona village
C.	SURFACE WATER ANALYSIS
1	Chiro Kukud Bauxite Mines
D.	AMBIENT NOISE MONITORING
1	Chiro Kukud Bauxite Mines
E.	RUNOFF WATER ANALYSIS
1	Chiro Kukud Bauxite Mines





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Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

JULY 2019

Report no: MEEPL/AUG0230/2019-20	Date: 12 th August, 2019
Sample described by customer: AMBIENT AIR QUALITY MONITORING	
Client Name: Hindalco Industries Limited	
Client Address: Lohardaga	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample type: AMBIENT AIR QUALITY MONITORING	
Marks on Sample: Location: Kukud Village – Near Mine Area	
Sample collected on: 16.07.2019	

LOCATION / IDENTIFICATION: Kukud Village – Near Mine Area				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	46.5
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	22.1
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	2.9
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	4.5
05.	Ammonia (NH ₃)	µg/m ³	400	3.3
06.	Ozone (O ₃)	µg/m ³	180	4.8
07.	Carbon Monoxide (CO)	mg/m ³	02	0.22
08.	Lead (Pb)	µg/m ³	1.0	0.03
09.	Nickel (Ni)	ng/m ³	20	1.2
10.	Arsenic (As)	ng/m ³	06	1.5
11.	Benzene (C ₆ H ₆)	µg/m ³	05	1.8
12.	Benzo (a) Pyrene	µg/m ³	01	0.33

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

JULY 2019

Report no: MEEPL/AUG0231/2019-20	Date: 12 th August, 2019
Sample described by customer: AMBIENT AIR QUALITY MONITORING	
Client Name: Hindalco Industries Limited	
Client Address: Lohardaga	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample type: AMBIENT AIR QUALITY MONITORING	
Marks on Sample: Location: Kukud Village – Near Weigh Bridge	
Sample collected on: 16.07.2019	

LOCATION / IDENTIFICATION: Kukud Village – Near Weigh Bridge				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	50.0
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	24.4
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	5.1
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	6.9
05.	Ammonia (NH ₃)	µg/m ³	400	4.4
06.	Ozone (O ₃)	µg/m ³	180	6.5
07.	Carbon Monoxide (CO)	mg/m ³	02	0.32
08.	Lead (Pb)	µg/m ³	1.0	0.03
09.	Nickel (Ni)	ng/m ³	20	1.8
10.	Arsenic (As)	ng/m ³	06	1.5
11.	Benzene (C ₆ H ₆)	µg/m ³	05	1.1
12.	Benzo (a) Pyrene	µg/m ³	01	0.30

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Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

JULY 2019

Report no: MEEPL/AUG0232/2019-20	Date: 12 th August, 2019
Sample described by customer: AMBIENT AIR QUALITY MONITORING	
Client Name: Hindalco Industries Limited	
Client Address: Lohardaga	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample type: AMBIENT AIR QUALITY MONITORING	
Marks on Sample: Location: Chiro Village – Near Mgazine	
Sample collected on: 16.07.2019	

LOCATION / IDENTIFICATION: Chiro Village – Near Mgazine				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	43.3
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	20.7
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	3.0
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	5.2
05.	Ammonia (NH ₃)	µg/m ³	400	2.9
06.	Ozone (O ₃)	µg/m ³	180	5.1
07.	Carbon Monoxide (CO)	mg/m ³	02	0.20
08.	Lead (Pb)	µg/m ³	1.0	0.02
09.	Nickel (Ni)	ng/m ³	20	1.5
10.	Arsenic (As)	ng/m ³	06	2.0
11.	Benzene (C ₆ H ₆)	µg/m ³	05	1.4
12.	Benzo (a) Pyrene	µg/m ³	01	0.22

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Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

JULY 2019

Report no: MEEPL/AUG0233/2019-20	Date: 12 th August, 2019
Sample described by customer: AMBIENT AIR QUALITY MONITORING	
Client Name: Hindalco Industries Limited	
Client Address: Lohardaga	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample type: AMBIENT AIR QUALITY MONITORING	
Marks on Sample: Location: Chiro Village – Near Pillar No. 1	
Sample collected on: 16.07.2019	

LOCATION / IDENTIFICATION: Chiro Village – Near Pillar No. 1				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	53.5
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	26.1
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	3.3
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	4.6
05.	Ammonia (NH ₃)	µg/m ³	400	3.2
06.	Ozone (O ₃)	µg/m ³	180	5.1
07.	Carbon Monoxide (CO)	mg/m ³	02	0.26
08.	Lead (Pb)	µg/m ³	1.0	0.02
09.	Nickel (Ni)	ng/m ³	20	1.1
10.	Arsenic (As)	ng/m ³	06	0.92
11.	Benzene (C ₆ H ₆)	µg/m ³	05	1.6
12.	Benzo (a) Pyrene	µg/m ³	01	0.22

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

JULY 2019

Report no: MEEPL/AUG0234/2019-20	Date: 12 th August, 2019
Sample described by customer: AMBIENT AIR QUALITY MONITORING	
Client Name: Hindalco Industries Limited	
Client Address: Lohardaga	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample type: AMBIENT AIR QUALITY MONITORING	
Marks on Sample: Location: Kudag Village – Near Hindalco Campus	
Sample collected on: 16.07.2019	

LOCATION / IDENTIFICATION: Near Chiro Kudag Village – Near Hindalco Campus				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	51.9
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	24.0
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	3.7
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	4.9
05.	Ammonia (NH ₃)	µg/m ³	400	3.3
06.	Ozone (O ₃)	µg/m ³	180	5.1
07.	Carbon Monoxide (CO)	mg/m ³	02	0.30
08.	Lead (Pb)	µg/m ³	1.0	0.03
09.	Nickel (Ni)	ng/m ³	20	1.6
10.	Arsenic (As)	ng/m ³	06	1.1
11.	Benzene (C ₆ H ₆)	µg/m ³	05	1.9
12.	Benzo (a) Pyrene	µg/m ³	01	0.26

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE





Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

JULY 2019

Report no: MEEPL/AUG0235/2019-20	Date: 12 th August, 2019
Sample described by customer: AMBIENT AIR QUALITY MONITORING	
Client Name: Hindalco Industries Limited	
Client Address: Lohardaga	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample type: AMBIENT AIR QUALITY MONITORING	
Marks on Sample: Location: Jaljali Village – Near Shiv Temple Sabag Road	
Sample collected on: 16.07.2019	

LOCATION / IDENTIFICATION: Jaljali Village – Near Shiv Temple Sabag Road				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	48.2
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	21.1
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	3.1
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	4.8
05.	Ammonia (NH ₃)	µg/m ³	400	4.2
06.	Ozone (O ₃)	µg/m ³	180	5.0
07.	Carbon Monoxide (CO)	mg/m ³	02	0.26
08.	Lead (Pb)	µg/m ³	1.0	0.02
09.	Nickel (Ni)	ng/m ³	20	1.1
10.	Arsenic (As)	ng/m ³	06	1.5
11.	Benzene (C ₆ H ₆)	µg/m ³	05	2.0
12.	Benzo (a) Pyrene	µg/m ³	01	0.30

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE





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Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

JULY 2019

Report no: MEEPL/AUG0236/2019-20	Date: 12 th August, 2019
Sample described by customer: AMBIENT AIR QUALITY MONITORING	
Client Name: Hindalco Industries Limited	
Client Address: Lohardaga	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample type: AMBIENT AIR QUALITY MONITORING	
Marks on Sample: Location: Amtahi Village – Near Tailoring Centre	
Sample collected on: 16.07.2019	

LOCATION / IDENTIFICATION: Amtahi Village – Near Tailoring Centre				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	52.9
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	24.7
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	3.8
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	4.4
05.	Ammonia (NH ₃)	µg/m ³	400	3.2
06.	Ozone (O ₃)	µg/m ³	180	5.7
07.	Carbon Monoxide (CO)	mg/m ³	02	0.33
08.	Lead (Pb)	µg/m ³	1.0	0.03
09.	Nickel (Ni)	ng/m ³	20	1.4
10.	Arsenic (As)	ng/m ³	06	1.1
11.	Benzene (C ₆ H ₆)	µg/m ³	05	1.9
12.	Benzo (a) Pyrene	µg/m ³	01	0.31

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

JULY 2019

Report no: MEEPL/AUG0237/2019-20	Date: 12 th August, 2019
Sample described by customer: AMBIENT AIR QUALITY MONITORING	
Client Name: Hindalco Industries Limited	
Client Address: Lohardaga	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample type: AMBIENT AIR QUALITY MONITORING	
Marks on Sample: Location: Ambakona Village	
Sample collected on: 16.07.2019	

LOCATION / IDENTIFICATION: Ambakona Village				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	39.6
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	18.2
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	2.5
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	3.9
05.	Ammonia (NH ₃)	µg/m ³	400	3.0
06.	Ozone (O ₃)	µg/m ³	180	5.1
07.	Carbon Monoxide (CO)	mg/m ³	02	0.22
08.	Lead (Pb)	µg/m ³	1.0	0.02
09.	Nickel (Ni)	ng/m ³	20	1.5
10.	Arsenic (As)	ng/m ³	06	1.2
11.	Benzene (C ₆ H ₆)	µg/m ³	05	1.9
12.	Benzo (a) Pyrene	µg/m ³	01	0.26

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

JULY 2019

Report no: MEEPL/AUG0238/2019-20	Date: 12th August, 2019
Sample described by customer : SURFACE WATER	
Client Name: Hindalco Industries Limited	
Client Address: Lohardaga	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample Type: SURFACE WATER	
Marks on Sample: Location: Chiro Kukud Bauxite Mines	
Quantity: 5 L X 2 No. PVC Can	
Sample collected on: 16.07.2019	

Sl. No.	Parameters	Unit	Result	Acceptable Limit (IS 10500:2012)	Method Reference
1	Colour	Hazen	<2	5 Max	APHA 22 nd Ed. 2012, 2120-B, 2-6
2	Odour	--	Agreeable	Agreeable	IS 3025 (Part 7): 1983, Reaffirmed 2006
3	Taste	--	Agreeable	Agreeable	IS 3025 (Part 7): 1983, Reaffirmed 2006
4	Turbidity	NTU	0.31	1 Max	APHA 22 nd Ed. 2012, 2130-B, 2-13
5	pH	--	7.0	6.5-8.5	APHA 22 nd Ed. 2012, 4500-H+-B, 4-92
6	Free Chlorides (Residual)	mg/l	<0.5	0.2 min	APHA 22 nd Ed. 2012, 4500-CI-G, 4-69
7	Total Dissolved Solids	mg/l	347	500 max	IS 3025 (Part 16): 1984, Reaffirmed 2006
8	Total hardness (as CaCO ₃)	mg/l	31	200 max	APHA 22 nd Ed. 2012, 4500-CIG, 4-69
9	Alkalinity Total (as CaCO ₃)	mg/l	38	200 max	IS 3025 (Part 237): 1986, Reaffirmed 2009
10	Chloride (as Cl)	mg/l	30	250 max	APHA 22 nd Ed. 2012, 4500-CI-b, 4-72
11	Sulphate (as SO ₄)	mg/l	27.2	200 max	APHA 22 nd Ed. 2012, 4500-so4-e, 4-190
12	Boron (as B)	mg/l	0.13	0.5 max	APHA 22 nd Ed. 2012, 4500-BB, 4-25
13	Magnesium (as Mg)	mg/l	5.5	30 max	APHA 22 nd Ed. 2012, 3500-Mg-B, 3-84





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Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

JULY 2019

Continuation Sheet MEEPL/AUG0238/2019-20

Sl. No.	Parameters	Unit	Result	Acceptable Limit (IS 10500:2012)	Method Reference
14	Fluoride (as F)	mg/l	0.10	1 max	APHA 22 nd Ed. 2012, 4500-FB & D, 4-84, 4-87
15	Calcium (as Ca)	mg/l	5.3	75 max	APHA 22 nd Ed. 2012, 3500-Ca-B, 3-67
16	Iron (as Fe)	mg/l	0.05	0.3 max	APHA 22 nd Ed. 2012, 3111-B, 3-18
17	Cadmium (as Cd)	mg/l	N.D	0.003 max	APHA 22 nd Ed. 2012, 3111-B, 3-18
18	Chromium Total (as Cr)	mg/l	N.D	0.05 max	APHA 22 nd Ed. 2012, 3111-B, 3-18
19	Copper (as Cu)	mg/l	N.D	0.05 max	APHA 22 nd Ed. 2012, 3111-B, 3-18
20	Lead (as Pb)	mg/l	N.D	0.01 max	APHA 22 nd Ed. 2012, 3111-B, 3-18
21	Zinc (as Zn)	mg/l	0.02	5 max	APHA 22 nd Ed. 2012, 3111-B, 3-18
22	Arsenic (as As)	mg/l	<0.01	0.01 max	APHA 22 nd Ed. 2012, 3114-B, 3-38
23	Selenium (as Se)	mg/l	N.D	0.001 max	APHA 22 nd Ed. 2012, 3112-B, 3-23
24	Mercury (as hg)	mg/l	N.D	0.01 max	APHA 22 nd Ed. 2012, 3114-B, 3-38
25	Cyanide (as CN)	mg/l	N.D	0.05 max	APHA 22 nd ED. 2012, 4500-CN.C & 4-39 & 4-44
26	Manganese (as Mn)	mg/l	N.D	0.1 max	APHA 22 nd Ed. 2012, 3111-B, 3-18
27	Dissolved Oxygen	mg/l	7.1	7-8	APHA 20 th ED. Method 4500-o g.

Conclusion: The Physical & Chemical Analysis report indicates that water is not contaminated.

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
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Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

JULY 2019

Report no: MEEPL/AUG0239/2019-20	Date: 12 th August, 2019
Sample described by customer : Measurement of Noise	
Client Name : Hindalco Industries Limited	
Client Address : Lohardaga	
Postal Code : 835203	
State : Jharkhand	
Country : India	
Sample Description : Measurement of Noise	
Sampling Method : Instrumental, using Sound level Metter	
Data Collection Date: 16.07.2019	

Location/Identification	Unit	Limit (day)	Result	Limit (night)	Result
Chiro Kukud Bauxite Mines	dB (A) L_{eq}	75	67.9	70	60.1

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

JULY 2019

Report no: MEEPL/AUG0240/2019-20			Date: 12th August, 2019		
Sample described by customer: Runoff Water					
Client Name: Hindalco Industries Limited					
Client Address: Lohardaga					
Postal Code: 835203					
State: Jharkhand					
Country: India					
Sample Type: Runoff Water – Surface Water					
Marks on Sample: Location: Chiro Kukud Bauxite Mines					
Quantity: 4 liters.					
Sample collected on: 16.07.2019					
Sl. No.	Analysis	Method	Result	Unit	Limits
1.	pH	APHA 22 nd Ed. 2012, 4500-H+-B,4-92	8.7	mg/l	5.5-9.0
2.	Total Suspended Solids	APHA 22 nd EDN: 2012-2540	85	mg/l	100
3.	BOD @ 27°C	IS 3025 (Part 44): 1993, RA2003, Amd.1	6.9	mg/l	30
4.	COD	IS 3025 (Part 58): 1993, RA2006, Amd.1	32	mg/l	250
5.	Oil & Grease	IS 3025(PART 39): 1991 RA 2003,Ed 2.1	<5.0	mg/l	10
6.	Total Dissolved Solids	APHA 22 ND EDN 2012-2540	1563	mg/l	2100
7.	Aluminium (as Al)	APHA 22 nd EDN 2012-3120B	1.0	mg/l	3
8.	Calcium (as Ca)	APHA 22 nd EDN 2012-3120B	6.4	mg/l	75
9.	Iron (as Fe)	APHA 22 nd EDN 2012-3120B	1.0	mg/l	3
10.	Temperature		31.7	°C	Shall not exceed 5°C above the receiving water temperature

For Mahabal Enviro Engineers Pvt. Ltd.

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Eco Ventures Pvt. Ltd.

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Mahabal Enviro Engineers Pvt. Ltd.

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CHIRO KUKUD BAUXITE MINE - ENVIRONMENTAL MONITORING REPORT

AUGUST 2019

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
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Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

AUGUST 2019

CONTENT

LOCATION – CHIRO KUKUD BAUXITE MINE	
A.	AMBIENT AIR QUALITY – CORE ZONE
1	Kukud Village Near Mine Area
2	Kukad Village Near Weigh Bridge
3	Chiro Village – Near Mgazine
4	Orsa Village hiro Village – Near Pillar No.1
B.	AMBIENT AIR QUALITY – BUFFER ZONE
1	Kukud Village – Near Hindalco Campus
2	Jaljali Village – Near Shiv Temle Sabag Road
3	Amtahi Village – Near Tailoring Centre
4	Ambakona village





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Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

AUGUST 2019

Report no: MEEPL/SEP0222/2019-20	Date: 14 th September, 2019
Sample described by customer: AMBIENT AIR QUALITY MONITORING	
Client Name: Hindalco Industries Limited	
Client Address: Lohardaga	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample type: AMBIENT AIR QUALITY MONITORING	
Marks on Sample: Location: Kukud Village – Near Mine Area	
Sample collected on: 17.08.2019	

LOCATION / IDENTIFICATION: Kukud Village – Near Mine Area				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	21.6
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	9.2
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	2.1
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	3.9
05.	Ammonia (NH ₃)	µg/m ³	400	2.6
06.	Ozone (O ₃)	µg/m ³	180	2.0
07.	Carbon Monoxide (CO)	mg/m ³	02	0.19
08.	Lead (Pb)	µg/m ³	1.0	0.03
09.	Nickel (Ni)	ng/m ³	20	1.5
10.	Arsenic (As)	ng/m ³	06	0.93
11.	Benzene (C ₆ H ₆)	µg/m ³	05	1.1
12.	Benzo (a) Pyrene	µg/m ³	01	0.19

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
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Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

AUGUST 2019

Report no: MEEPL/SEP0223/2019-20	Date: 14 th September, 2019
Sample described by customer: AMBIENT AIR QUALITY MONITORING	
Client Name: Hindalco Industries Limited	
Client Address: Lohardaga	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample type: AMBIENT AIR QUALITY MONITORING	
Marks on Sample: Location: Kukad Village – Near Weigh Bridge	
Sample collected on: 17.08.2019	

LOCATION / IDENTIFICATION: Kukad Village – Near Weigh Bridge				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	29.5
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	18.3
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	3.8
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	4.1
05.	Ammonia (NH ₃)	µg/m ³	400	3.6
06.	Ozone (O ₃)	µg/m ³	180	5.1
07.	Carbon Monoxide (CO)	mg/m ³	02	0.24
08.	Lead (Pb)	µg/m ³	1.0	0.03
09.	Nickel (Ni)	ng/m ³	20	1.5
10.	Arsenic (As)	ng/m ³	06	1.1
11.	Benzene (C ₆ H ₆)	µg/m ³	05	1.8
12.	Benzo (a) Pyrene	µg/m ³	01	0.27

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

AUGUST 2019

Report no: MEEPL/SEP0224/2019-20	Date: 14 th September, 2019
Sample described by customer: AMBIENT AIR QUALITY MONITORING	
Client Name: Hindalco Industries Limited	
Client Address: Lohardaga	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample type: AMBIENT AIR QUALITY MONITORING	
Marks on Sample: Location: Chiro Village – Near Mgazine	
Sample collected on: 17.08.2019	

LOCATION / IDENTIFICATION: Chiro Village – Near Mgazine				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	19.1
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	8.5
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	1.6
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	3.1
05.	Ammonia (NH ₃)	µg/m ³	400	2.7
06.	Ozone (O ₃)	µg/m ³	180	1.9
07.	Carbon Monoxide (CO)	mg/m ³	02	0.18
08.	Lead (Pb)	µg/m ³	1.0	0.02
09.	Nickel (Ni)	ng/m ³	20	1.1
10.	Arsenic (As)	ng/m ³	06	0.71
11.	Benzene (C ₆ H ₆)	µg/m ³	05	1.5
12.	Benzo (a) Pyrene	µg/m ³	01	0.21

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

AUGUST 2019

Report no: MEEPL/SEP0225/2019-20	Date: 14 th September, 2019
Sample described by customer: AMBIENT AIR QUALITY MONITORING	
Client Name: Hindalco Industries Limited	
Client Address: Lohardaga	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample type: AMBIENT AIR QUALITY MONITORING	
Marks on Sample: Location: Chiro Village – Near Pillar No. 1	
Sample collected on: 17.08.2019	

LOCATION / IDENTIFICATION: Chiro Village – Near Pillar No. 1				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	22.0
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	10.4
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	1.5
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	3.2
05.	Ammonia (NH ₃)	µg/m ³	400	2.0
06.	Ozone (O ₃)	µg/m ³	180	1.9
07.	Carbon Monoxide (CO)	mg/m ³	02	0.22
08.	Lead (Pb)	µg/m ³	1.0	0.02
09.	Nickel (Ni)	ng/m ³	20	1.5
10.	Arsenic (As)	ng/m ³	06	1.1
11.	Benzene (C ₆ H ₆)	µg/m ³	05	1.7
12.	Benzo (a) Pyrene	µg/m ³	01	0.27

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey

SENIOR EXECUTIVE





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Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

AUGUST 2019

Report no: MEEPL/SEP0226/2019-20	Date: 14 th September, 2019
Sample described by customer: AMBIENT AIR QUALITY MONITORING	
Client Name: Hindalco Industries Limited	
Client Address: Lohardaga	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample type: AMBIENT AIR QUALITY MONITORING	
Marks on Sample: Location: Kudag Village – Near Hindalco Campus	
Sample collected on: 17.08.2019	

LOCATION / IDENTIFICATION: Near Chiro Kudag Village – Near Hindalco Campus				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	20.4
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	9.0
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	2.1
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	4.4
05.	Ammonia (NH ₃)	µg/m ³	400	2.9
06.	Ozone (O ₃)	µg/m ³	180	6.7
07.	Carbon Monoxide (CO)	mg/m ³	02	0.23
08.	Lead (Pb)	µg/m ³	1.0	0.03
09.	Nickel (Ni)	ng/m ³	20	1.3
10.	Arsenic (As)	ng/m ³	06	0.84
11.	Benzene (C ₆ H ₆)	µg/m ³	05	1.8
12.	Benzo (a) Pyrene	µg/m ³	01	0.22

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE





Mahabal Enviro Engineers Pvt. Ltd.

Branch Office:

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E-mail: mahabalanranchi@gmail.com

Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

AUGUST 2019

Report no: MEEPL/SEP0227/2019-20	Date: 14 th September, 2019
Sample described by customer: AMBIENT AIR QUALITY MONITORING	
Client Name: Hindalco Industries Limited	
Client Address: Lohardaga	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample type: AMBIENT AIR QUALITY MONITORING	
Marks on Sample: Location: Jaljali Village – Near Shiv Temple Sabag Road	
Sample collected on: 17.08.2019	

LOCATION / IDENTIFICATION: Jaljali Village – Near Shiv Temple Sabag Road				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	17.9
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	8.3
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	1.6
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	4.0
05.	Ammonia (NH ₃)	µg/m ³	400	2.9
06.	Ozone (O ₃)	µg/m ³	180	4.1
07.	Carbon Monoxide (CO)	mg/m ³	02	0.20
08.	Lead (Pb)	µg/m ³	1.0	0.02
09.	Nickel (Ni)	ng/m ³	20	1.0
10.	Arsenic (As)	ng/m ³	06	0.87
11.	Benzene (C ₆ H ₆)	µg/m ³	05	1.6
12.	Benzo (a) Pyrene	µg/m ³	01	0.19

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

AUGUST 2019

Report no: MEEPL/SEP0228/2019-20	Date: 14 th September, 2019
Sample described by customer: AMBIENT AIR QUALITY MONITORING	
Client Name: Hindalco Industries Limited	
Client Address: Lohardaga	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample type: AMBIENT AIR QUALITY MONITORING	
Marks on Sample: Location: Amtahi Village – Near Tailoring Centre	
Sample collected on: 17.08.2019	

LOCATION / IDENTIFICATION: Amtahi Village – Near Tailoring Centre				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	18.3
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	10.5
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	1.5
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	3.3
05.	Ammonia (NH ₃)	µg/m ³	400	1.8
06.	Ozone (O ₃)	µg/m ³	180	4.7
07.	Carbon Monoxide (CO)	mg/m ³	02	0.19
08.	Lead (Pb)	µg/m ³	1.0	0.03
09.	Nickel (Ni)	ng/m ³	20	0.9
10.	Arsenic (As)	ng/m ³	06	0.6
11.	Benzene (C ₆ H ₆)	µg/m ³	05	1.1
12.	Benzo (a) Pyrene	µg/m ³	01	0.16

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

AUGUST 2019

Report no: MEEPL/SEP0229/2019-20	Date: 14 th September, 2019
Sample described by customer: AMBIENT AIR QUALITY MONITORING	
Client Name: Hindalco Industries Limited	
Client Address: Lohardaga	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample type: AMBIENT AIR QUALITY MONITORING	
Marks on Sample: Location: Ambakona Village	
Sample collected on: 17.08.2019	

LOCATION / IDENTIFICATION: Ambakona Village				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	17.9
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	7.1
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	1.2
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	3.9
05.	Ammonia (NH ₃)	µg/m ³	400	2.3
06.	Ozone (O ₃)	µg/m ³	180	2.8
07.	Carbon Monoxide (CO)	mg/m ³	02	0.16
08.	Lead (Pb)	µg/m ³	1.0	0.02
09.	Nickel (Ni)	ng/m ³	20	1.1
10.	Arsenic (As)	ng/m ³	06	0.65
11.	Benzene (C ₆ H ₆)	µg/m ³	05	1.6
12.	Benzo (a) Pyrene	µg/m ³	01	0.17

For Mahabal Enviro Engineers Pvt. Ltd.

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Eco Ventures Pvt. Ltd.

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Corporate Office: 7/8 Bhaveshwar Bhuvan, Opp Portugese Church, Near Dindayal Upadhyay Garden,
Gokhale Road (North), Dadar (West), Mumbai 400 028. Tel: +91 22 24370520 / 6672.

E: ecoventures.mumbai@gmail.com / ecoventures@eco-ventures.in

Mahabal Enviro Engineers Pvt. Ltd.

At Booty, Near PHED Colony, Behind Pump House, PO – RMCC,
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CHIRO KUKUD BAUXITE MINE - ENVIRONMENTAL MONITORING REPORT

SEPTEMBER 2019

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE





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CONTENT

LOCATION – CHIRO KUKUD BAUXITE MINE	
A.	AMBIENT AIR QUALITY – CORE ZONE
1	Kukud Village Near Mine Area
2	Kukad Village Near Weigh Bridge
3	Chiro Village – Near Mgazine
4	Orsa Village hiro Village – Near Pillar No.1
B.	AMBIENT AIR QUALITY – BUFFER ZONE
1	Kukud Village – Near Hindalco Campus
2	Jaljali Village – Near Shiv Temle Sabag Road
3	Amtahi Village – Near Tailoring Centre
4	Ambakona village





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Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

SEPTEMBER 2019

Reports no: MEEPL/OCT0177/2019-20	Date: 18 th October, 2019
Sample described by customer: AMBIENT AIR QUALITY MONITORING	
Client Name: Hindalco Industries Limited	
Client Address: Lohardaga	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample type: AMBIENT AIR QUALITY MONITORING	
Marks on Sample: Location: Kukud Village – Near Mine Area	
Sample collected on: 17.09.2019	

LOCATION / IDENTIFICATION: Kukud Village – Near Mine Area				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	27.4
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	16.9
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	2.5
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	1.8
05.	Ammonia (NH ₃)	µg/m ³	400	4.6
06.	Ozone (O ₃)	µg/m ³	180	6.9
07.	Carbon Monoxide (CO)	mg/m ³	02	0.15
08.	Lead (Pb)	µg/m ³	1.0	0.02
09.	Nickel (Ni)	ng/m ³	20	1.3
10.	Arsenic (As)	ng/m ³	06	1.8
11.	Benzene (C ₆ H ₆)	µg/m ³	05	1.5
12.	Benzo (a) Pyrene	µg/m ³	01	0.21

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

SEPTEMBER 2019

Reports no: MEEPL/OCT0178/2019-20	Date: 18 th October, 2019
Sample described by customer: AMBIENT AIR QUALITY MONITORING	
Client Name: Hindalco Industries Limited	
Client Address: Lohardaga	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample type: AMBIENT AIR QUALITY MONITORING	
Marks on Sample: Location: Kukad Village – Near Weigh Bridge	
Sample collected on: 17.09.2019	

LOCATION / IDENTIFICATION: Kukad Village – Near Weigh Bridge

Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	33.1
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	19.9
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	3.8
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	2.2
05.	Ammonia (NH ₃)	µg/m ³	400	5.1
06.	Ozone (O ₃)	µg/m ³	180	7.4
07.	Carbon Monoxide (CO)	mg/m ³	02	0.17
08.	Lead (Pb)	µg/m ³	1.0	0.03
09.	Nickel (Ni)	ng/m ³	20	1.8
10.	Arsenic (As)	ng/m ³	06	2.0
11.	Benzene (C ₆ H ₆)	µg/m ³	05	1.4
12.	Benzo (a) Pyrene	µg/m ³	01	0.16

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

SEPTEMBER 2019

Reports no: MEEPL/OCT0179/2019-20	Date: 18 th October, 2019
Sample described by customer: AMBIENT AIR QUALITY MONITORING	
Client Name: Hindalco Industries Limited	
Client Address: Lohardaga	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample type: AMBIENT AIR QUALITY MONITORING	
Marks on Sample: Location: Chiro Village – Near Mgazine	
Sample collected on: 17.09.2019	

LOCATION / IDENTIFICATION: Chiro Village – Near Mgazine				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	25.6
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	14.8
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	3.2
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	2.0
05.	Ammonia (NH ₃)	µg/m ³	400	3.7
06.	Ozone (O ₃)	µg/m ³	180	8.1
07.	Carbon Monoxide (CO)	mg/m ³	02	0.19
08.	Lead (Pb)	µg/m ³	1.0	0.01
09.	Nickel (Ni)	ng/m ³	20	1.6
10.	Arsenic (As)	ng/m ³	06	1.2
11.	Benzene (C ₆ H ₆)	µg/m ³	05	2.0
12.	Benzo (a) Pyrene	µg/m ³	01	0.22

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

SEPTEMBER 2019

Reports no: MEEPL/OCT0180/2019-20	Date: 18 th October, 2019
Sample described by customer: AMBIENT AIR QUALITY MONITORING	
Client Name: Hindalco Industries Limited	
Client Address: Lohardaga	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample type: AMBIENT AIR QUALITY MONITORING	
Marks on Sample: Location: Chiro Village – Near Pillar No. 1	
Sample collected on: 17.09.2019	

LOCATION / IDENTIFICATION: Chiro Village – Near Pillar No. 1				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	21.3
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	13.1
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	2.2
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	1.5
05.	Ammonia (NH ₃)	µg/m ³	400	4.2
06.	Ozone (O ₃)	µg/m ³	180	6.8
07.	Carbon Monoxide (CO)	mg/m ³	02	0.10
08.	Lead (Pb)	µg/m ³	1.0	0.02
09.	Nickel (Ni)	ng/m ³	20	1.4
10.	Arsenic (As)	ng/m ³	06	1.0
11.	Benzene (C ₆ H ₆)	µg/m ³	05	0.8
12.	Benzo (a) Pyrene	µg/m ³	01	0.11

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

SEPTEMBER 2019

Reports no: MEEPL/OCT0181/2019-20	Date: 18 th October, 2019
Sample described by customer: AMBIENT AIR QUALITY MONITORING	
Client Name: Hindalco Industries Limited	
Client Address: Lohardaga	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample type: AMBIENT AIR QUALITY MONITORING	
Marks on Sample: Location: Kudag Village – Near Hindalco Campus	
Sample collected on: 17.09.2019	

LOCATION / IDENTIFICATION: Near Chiro Kudag Village – Near Hindalco Campus				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	17.8
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	10.4
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	2.9
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	1.7
05.	Ammonia (NH ₃)	µg/m ³	400	3.3
06.	Ozone (O ₃)	µg/m ³	180	7.5
07.	Carbon Monoxide (CO)	mg/m ³	02	0.12
08.	Lead (Pb)	µg/m ³	1.0	0.03
09.	Nickel (Ni)	ng/m ³	20	1.5
10.	Arsenic (As)	ng/m ³	06	1.3
11.	Benzene (C ₆ H ₆)	µg/m ³	05	0.9
12.	Benzo (a) Pyrene	µg/m ³	01	0.23

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

SEPTEMBER 2019

Reports no: MEEPL/OCT0182/2019-20	Date: 18 th October, 2019
Sample described by customer: AMBIENT AIR QUALITY MONITORING	
Client Name: Hindalco Industries Limited	
Client Address: Lohardaga	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample type: AMBIENT AIR QUALITY MONITORING	
Marks on Sample: Location: Jaljali Village – Near Shiv Temple Sabag Road	
Sample collected on: 17.09.2019	

LOCATION / IDENTIFICATION: Jaljali Village – Near Shiv Temple Sabag Road

Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	23.0
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	12.8
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	3.6
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	2.4
05.	Ammonia (NH ₃)	µg/m ³	400	5.2
06.	Ozone (O ₃)	µg/m ³	180	6.5
07.	Carbon Monoxide (CO)	mg/m ³	02	0.16
08.	Lead (Pb)	µg/m ³	1.0	0.02
09.	Nickel (Ni)	ng/m ³	20	1.2
10.	Arsenic (As)	ng/m ³	06	1.6
11.	Benzene (C ₆ H ₆)	µg/m ³	05	1.7
12.	Benzo (a) Pyrene	µg/m ³	01	0.20

For Mahabal Enviro Engineers Pvt. Ltd.

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Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

SEPTEMBER 2019

Reports no: MEEPL/OCT0183/2019-20

Date: 18th October, 2019

Sample described by customer: AMBIENT AIR QUALITY MONITORING

Client Name: Hindalco Industries Limited

Client Address: Lohardaga

Postal Code: 835203

State: Jharkhand

Country: India

Sample type: AMBIENT AIR QUALITY MONITORING

Marks on Sample: Location: Amtahi Village – Near Tailoring Centre

Sample collected on: 17.09.2019

LOCATION / IDENTIFICATION: Amtahi Village – Near Tailoring Centre

Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	14.6
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	9.2
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	1.8
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	1.5
05.	Ammonia (NH ₃)	µg/m ³	400	3.0
06.	Ozone (O ₃)	µg/m ³	180	7.3
07.	Carbon Monoxide (CO)	mg/m ³	02	0.06
08.	Lead (Pb)	µg/m ³	1.0	0.01
09.	Nickel (Ni)	ng/m ³	20	0.9
10.	Arsenic (As)	ng/m ³	06	1.2
11.	Benzene (C ₆ H ₆)	µg/m ³	05	2.1
12.	Benzo (a) Pyrene	µg/m ³	01	0.19

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
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Hindalco Industries: Chiro Kukud

Environmental Monitoring Report

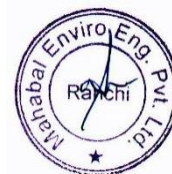
SEPTEMBER 2019

Reports no: MEEPL/OCT0184/2019-20	Date: 18 th October, 2019
Sample described by customer: AMBIENT AIR QUALITY MONITORING	
Client Name: Hindalco Industries Limited	
Client Address: Lohardaga	
Postal Code: 835203	
State: Jharkhand	
Country: India	
Sample type: AMBIENT AIR QUALITY MONITORING	
Marks on Sample: Location: Ambakona Village	
Sample collected on: 17.09.2019	

LOCATION / IDENTIFICATION: Ambakona Village				
Sl. No.	PARAMETERS	UNIT	Standard Limit	Concentration
01.	Particulate Matter (size less than 10 µm) PM ₁₀	µg/m ³	100	12.3
02.	Particulate Matter (size less than 2.5 µm) PM _{2.5}	µg/m ³	60	8.0
03.	Sulphur Dioxide (SO ₂)	µg/m ³	80	1.2
04.	Nitrogen Dioxide (NO ₂)	µg/m ³	80	1.0
05.	Ammonia (NH ₃)	µg/m ³	400	2.9
06.	Ozone (O ₃)	µg/m ³	180	7.1
07.	Carbon Monoxide (CO)	mg/m ³	02	0.05
08.	Lead (Pb)	µg/m ³	1.0	0.02
09.	Nickel (Ni)	ng/m ³	20	1.3
10.	Arsenic (As)	ng/m ³	06	0.8
11.	Benzene (C ₆ H ₆)	µg/m ³	05	0.6
12.	Benzo (a) Pyrene	µg/m ³	01	0.14

For Mahabal Enviro Engineers Pvt. Ltd.

Vijay Pandey
SENIOR EXECUTIVE



Annexure-2

BREAK UP THE COST OF ENVIRONMENTAL MEASURES DURING THE YEAR 2019-20

The composite cost during the year 2019-20 for environmental protection & pollution control by Jharkhand Mines division of M/s Hindalco Industries Ltd & M/s Minerals & Minerals Ltd for implementation of the suggested measures in EC at our all the operating mines in the state of Jharkhand-namely Pakhar (115.13 Ha), Pakhar (15.58 Ha), Pakhar (109.507 Ha), Pakhar (8.09 Ha), Pakhar (35.12Ha), Serengdag (140.06 Ha), Serengdag (155.81 Ha), Jalim & Sanai (12.14 Ha), Gurdari (584.19 Ha), Amtipani (190.95 Ha), Kujam I (80.97 Ha) Kujam II (157.38 Ha), Bagru (75.41 Ha), Hisri New (14.55 Ha), Chiro kukud (152.57 ha), Orsa pat (196.36 Ha), Bhusar (65.31 Ha) and Bimarla Bauxite Mines (134.52 Ha).

S. No	Description	Budget (in Rupees) FY 2019-20	Actual (in Rupees) FY 2019-20 (from April'19 to Sep'19)
1	Pollution Control & Environment monitoring	3,351,809.00	1,650,803.00
2	Reclamation/ Back filing & Rehabilitation**	25,300,000.00	8,571,756.00
3	Green belt, Plantation & Water spraying arrangement	4,725,854.00	2,360,877.00
4	Rural Development	22,035,865.00	9,848,659.98

**Part of OB removed cost.



(Basudev Gangopadhyay)
Convenor (Quality & Environment)



Annexure - 3

Date: 10.01.19

Office Order

Environmental Cell has been re-constituted at Chiro Kukud Bauxite Mines (Area 152.57 Ha) comprising below mentioned team members. The team will ensure compliance of Environment Act, Regulation & Rule in respect of the said mines of Hindalco Industries Limited.

1. Mr. Rajesh Ambastha (Coordinator)
2. Mr. Tapas Gachhayat (Member)
3. Mr. Satyendra Sharma –Foreman (Member)
4. Mr. Nagendar Singh –Mining Mate (Member)

A handwritten signature in blue ink, appearing to be "Basudev Gangopadhyay", with a horizontal line underneath.

Basudev Gangopadhyay
Convenor (Quality & Environment)


Annexure 4

Production, Mined Out, Back Filled and Over Burden removal from April'19 to September'19									
S No	Name of the Mines	Mining lease area (ha)	Production Capacity (MT)*	Lease Period*	Production (MT)	Mined out area (ha)	Back filled area (ha)	Over burden (Cu.M)	
1	Bagru bauxite Mine	75.41	85000	22.01.1974 to 31.03.2030	Mine is not in operation since November 2013.				
2	Bhusar Bauxite Mine	65.31	280000	11.07.1981 to 31.03.2030	4895	0.07	0.00	77442.60	
3	Hisri (New) Bauxite Mine	14.55	100000	19.07.1981 to 31.03.2030	7972	0.06	0.00	11629.94	
4	Kujam - I Bauxite Mine	80.87	150000	13.03.2006 to 12.03.2056	NIL	NIL	0.67	21974.96	
5	Kujam - II Bauxite Mine	157.38	300000	24.03.2006 to 23.03.2056	NIL	NIL	1.20	53614.90	
6	Amtipani Bauxite Mine	190.95	150000	13.03.2006 to 12.03.2056	NIL	NIL	1.00	107763.230	
7	Gurdari Bauxite Mine	584.19	325000	23.03.1985 to 22.03.2035	153475	6.95	4.67	111211.184	
8	Shrengdag A Bauxite Mine	155.81	260000	16.10.1974 to 31.03.2030	147045	5.00	7.00	325000	
9	Shrengdag B Bauxite Mine	140.07	100000	04.10.1978 to 31.03.2030	NIL	NIL	NIL	NIL	
10	Jalim&Sanai Bauxite Mine	12.14	50000	16.10.1974 to 31.03.2030	28545	0.39	0.33	16000	

Annexure 4

11	Orsapat Bauxite Mine	196.36	200000	17.07.1986 to 16.07.2036	NIL	NIL	NIL	NIL	
12	Chiro Kukud bauxite Mine	152.57	100000	29.01.1985 to 28.01.2035	NIL	NIL	NIL	NIL	
13	Pakhhar (8.09)	8.09	80000	16.05.1973 to 31.03.2030	NIL	NIL	NIL	NIL	
14	Pakhhar (35.12)	35.12	200000	17.04.1975 to 31.03.2030	NIL	NIL	NIL	NIL	
15	Pakhhar (115.13)	115.13	300000	19.07.1996 to 31.03.2030	25000	0.35	0.58	72808.76	
Minerals & Minerals Limited									
16	Pakhhar (15.58)	15.58	60000	28.04.1965 to 31.03.2030	49800	0.4	0.20	48359.23	
17	Pakhhar (109.507)	109.507	280000	26.07.2008 to 25.07.2058	118700	1.00	2.04	162256	
18	Bimarla Bauxite Mine	134.526	300000	18.07.2009 to 17.07.2059	87320	4.33	3.10	241367.05	

*Static information about the mines included in the above table


Basudev Gangopadhyay
Convenor (Quality & Environment)